REMARKS

I. Status of Application

1. Status of Claims

Claims 1-11 are pending in the application and are presented for reconsideration. Claims 3-7 are withdrawn from consideration; Claims 1, 8 and 10-11 are allowed; Claims 2 and 11 are amended; Claims 1 and 8-10 remain in the application unchanged. No new matter has been added to the application.

2. Claim Rejections

Claims 2 and 11 are rejected under 35 U.S.C. § 112, first paragraph.

Claim 2 is rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 is objected to as being dependent upon a rejected base claim.

The Examiner's rejections of the claims are respectfully traversed.

3. Specification

The specification has been amended to replace occurrences of "resistance R_O" with "impedance Z_D", as described more fully below in the arguments relating to the response to the rejection of claims 2 and 11 under 35 U.S.C. § 112, first paragraph.

Support for the amendments to the specification may be found in originally filed Claims 1 and 5, and the specification at least at page 4, lines 23-27, and at page 8, lines 18-21.

4. Drawings

The drawing has been amended to replace occurrences of "R_O" and "Resistance" with "Z_D" and "impedance", respectively, as described more fully below in the arguments relating to the response to the rejection of

claims 2 and 11 under 35 U.S.C. § 112, first paragraph. In particular, FIG. 1 has been amended to replace "R_O" with "Z_D"; FIG. 3 has been amended to replace "Resistance" with "Impedance"; and FIG. 5A has been amended to replace "R_O" with "Z_D".

Support for the amendments to the specification may be found in originally filed Claims 1 and 5, and the specification at least at page 4, lines 23-27, and at page 8, lines 18-21.

II. Response to Rejection of Claims

1. Response to Rejection of Claims Under 35 U.S.C. § 112, First Paragraph

Claims 2 and 11 are rejected under 35 U.S.C. § 112, first paragraph. In this regard, the Examiner states that the specification, while being enabling for "where R_O comprises said signal driver output *resistance* (emphasis added)", does not reasonably provide enablement for "where R_O comprises said signal driver output impedance". Further the Examiner states that the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The Applicant respectfully traverses the Examiner's characterization of what Applicant's specification fairly teaches.

First, it is very well known in the art that in circuits with capacitors and inductors, one may generalize Ohm's law, replacing the word "resistance" with the word "impedance". In particular, as the well-known authoritative text "The Art of Electronics", coauthored by Paul Horowitz and Winfield Hill, published by the Press Syndicate of the University of Cambridge, Cambridge, England (1987), p. 25, explains:

> Circuits with capacitors and inductors are more complicated than the resistive circuits we talked about earlier, in that they depend on frequency; they "corrupt" inputs such as square waves, as we just saw. Yet *it is possible to generalize Ohm's law, replacing the word "resistance" with "impedance", in order to describe any circuit containing these linear passive devices (resistors, capacitors, and*

> *inductors).* You could think of the subject of impedance and reactance as Ohm's law for circuits that include capacitors and inductors. Some important terminology: *impedance is the "generalized resistance"*; inductors and capacitors have reactance (they are "reactive"); resistors have resistance (they are "resistive"). In other words, impedance = resistance + reactance (more about this later). However, you'll see statements like "the impedance at this frequency is ...". The reason you don't have to use the word reactance in such a case is that *impedance covers everything.* In fact, *you frequently use the word impedance even when you know it's a resistance you're talking about; you say "the source impedance" or "the output impedance" when you mean the Thevenin equivalent resistance of some source.* (Emphasis added).

Amended Claim 2 recites:

> A method in accordance with claim 1, wherein:
> said calculated characteristic capacitance is selected such that for a desired 95% full signal transition time *t*, *t* is approximately equal to $3*Z_D*C_{RM}$, where Z_D comprises said signal driver output impedance and C_{RM} comprises said redistribution metal characteristic capacitance.

Per the above quote from Horowitz & Hill's "The Art of Electronics", a widely recognized authority in the art of electronics, any person skilled in the art of electronics understands that the recited phrase "said signal driver output impedance" refers to the Thevenin equivalent resistance of the output driver.

Second, the specification does, in several places, provide enablement for "where Z_D comprises said signal driver output impedance". For example, at page 4, lines 23-27 of the specification, it is described:

> In accordance with the method of the invention, a desired slew rate for a signal generated by a signal driver is achieved by calculating a characteristic capacitance which *together with the signal driver output impedance* will produce a resulting time constant on the transmission line to achieve the desired slew rate. (Emphasis added).

As another example, at page 8, lines 18-21 of the specification as amended, it is described:

> As known in the art, the load capacitance and the *impedance* (parallel combination of *output impedance* Z_D and transmission line characteristic impedance Z_O) add to the RC time constant of the signal,

which affects how quickly the output signal transitions.

Additionally, originally presented and previously presented claims 1 and 5 (claim 5 now being withdrawn), recite "output *impedance*". Claim 1 in particular recites:

> A method for controlling the slew rate of a signal driven by *a signal driver characterized by an output impedance* onto a transmission line of an integrated circuit device, comprising:
> determining a desired slew rate for said signal;
> calculating characteristic capacitance which together with *said signal driver output impedance* will produce a resulting time constant on said transmission line to achieve said desired slew rate;
> calculating an interconnection path characterized by a redistribution metal characteristic capacitance substantially equal to said calculated characteristic capacitance.

An originally filed claim may constitute an adequate written description of the invention. In *In re Gardner, infra*, the originally filed claims were not specifically described in the disclosure. The Patent Office held that the application did not contain an adequate "written description" as required by § 112, first paragraph; on appeal, however, the CCPA reversed, noting that the claims themselves adequately described the invention.

As stated by the CCPA:

> [W]e consider the original claim in itself adequate "written description" of the claimed invention. It was equally a "written description" whether located among the original claims or in the descriptive part of the specification. (*In re Gardner*, 480 F. 2d 879, 178 USPQ 149 (CCPA 1973)).

Furthermore, as also stated by the CCPA:

> It is well settled that the specification of an application may be corrected or implemented by matter contained in an original claim, and that such matter may form as much a part of the disclosure of an application as if it had appeared in the body of the specification. *Bocciarelli v. Huffman,* 232 F.2d 647, 109 USPQ 385, 388 (CCPA,

1956).

In accordance with the holdings of the CCPA in each of *In re Gardner* and *Bocciarelli v. Huffman*, *infra*, and with the support from the specification and claims cited above, the specification and drawings have been amended to correct that the output driver is characterized by the more general "output impedance Z_D" rather than "output resistance R_O".

In view of the above, the Applicant believes that the specification and drawings not only provide the support, but also provide sufficient enablement, for "where Z_D comprises said signal driver output impedance" as recited in Applicant's claims 2 and 11. The Applicant therefore respectfully requests the Examiner to reconsider and withdraw the rejections of claims 2 and 11 under 35 U.S.C. § 112, first paragraph.

2. Response to Rejection of Claims Under 35 U.S.C. § 112, Second Paragraph

Claim 2 is rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Examiner states that the antecedent basis for "said characteristic capacitance" is not clear because there is both a calculated and a redistribution metal characteristic capacitance recited in claim 1.

Claim 2 has been amended to recite "said calculated characteristic capacitance is selected such that for a desired 95% full signal transition time *t*, *t* is approximately equal to $3*Z_D*C_{RM}$, where Z_D comprises said signal driver output impedance and C_{RM} comprises said redistribution metal characteristic capacitance". The Applicant believes this amendment overcomes the rejection of claim 2 under 35 U.S.C. § 112, second paragraph, and respectfully requests the Examiner to withdraw the § 112, first paragraph rejection of claim 2.

3. Response to Objection of Claim 9

Claim 9 is objected to as being dependent upon a rejected base claim (claim 2). As described above, Claim 2 is now believed to be in condition for allowance. Accordingly, the Applicant respectfully requests the Examiner to withdraw the objection of claim 2.

Conclusion

In view of the foregoing remarks, it is respectfully submitted that none of the references cited by the Examiner taken alone or in any combination shows, teaches, or discloses the claimed invention, and that Claims 1-2 and 8-11 are in condition for allowance. Reexamination and reconsideration are respectfully requested.

Should the Examiner have any questions regarding this amendment, or should the Examiner believe that it would further prosecution of this application, the Examiner is invited to call the undersigned directly.

Respectfully submitted,

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